

REMARKS

Claims 2, 4-14 and 19-23 are pending. By this Amendment, claims 11 and 23 are amended.

The Examiner rejects claims 2, 4-9, 11-14 and 19-23 under 35 U.S.C. §103(a) over U.S. Patent No. 6,602,472 to Zimmermann et al. in view of U.S. Patent No. 5,994,696 to Tai et al.; and rejects claim 10 under 35 U.S.C. §103(a) over Zimmermann and Tai and further in view of U.S. Patent No. 6,633,031 to Shultz. These rejections are respectfully traversed.

Applicants' independent claim 23 is directed to an electrospray source having a structure comprising a support having a main face. A wafer is formed on the main face of the support and integral with the main face of the support. A part of the wafer constituting at least one flat and thin tip is cantilevered with respect to the support. The tip including a first face and a second face and is provided with a capillary slot formed through a complete thickness of the tip from the first face through the second face. The thickness is substantially orthogonal to the main face of the support. The capillary slot leads to an end of the tip to form an ejection orifice of the electrospray source. The electrospray source includes means for supplying the capillary slot with liquid to be nebulized and means for applying an electrospray voltage to the liquid.

Applicants' independent claim 11 is directed to a method of manufacturing a structure that is an electrospray source comprising, the formation of a support from a substrate. The support has a main face. The formation of a wafer having a part constituting a flat and thin tip including a first face and a second face, the tip being provided with a capillary slot, to convey a liquid to be nebulised, formed in the complete thickness of the tip from the first face through the second face and which

ends up at the end of the tip. The wafer is made integral on main face of the support and the tip is cantilevered along a plane in relation to the support. The thickness is substantially orthogonal to the plane.

Such features encompass Applicants' exemplary embodiment as illustrated in Fig. 1A wherein the electric spray source includes a support 1 and a wafer 2 integral with the support 1. A part of the wafer 2 forms a tip 3 cantilevered along a plane in relation to the support 1. The wafer includes in its center a recess 4 constituting a reservoir. A capillary slot 5 connects the reservoir 4 to the end 6 of the tip 3. As shown in Fig. 2 the capillary slot 5 is formed through the complete thickness of the tip 3 orthogonal to the plane from one face of the tip through to the other face. As described in Applicants' as-filed specification at page 40, a surface of the substrate 10 is covered with a layer of a material intended to constitute the wafer of the structure. The above description from the specification does not limit Applicants' claims.

Zimmerman does not disclose a tip comprising a first face and a second face and a capillary slot formed through a complete thickness of the tip from the first face through the second face as in Applicants' amended independent claim 23.

In contrast, the Zimmermann patent discloses a laboratory microchip 50 having a microspray tip 57 including a channel 56. Microchip 50 includes a drawing-in tube 51. Sample reservoirs 52 open into a channel 53 which in turn has a substance conveying connection the to drawing-in tube 51.

The laboratory microchip uses the capillary electrophoresis method. To accommodate substances to be examined on a laboratory microchip, one or more depressions 11 are provided in the substrate which act as reservoirs for the

substance sample or samples. To perform an experiment, the sample is first moved along a transport channel 15 on the microchip. In Zimmerman, the transport channel can be formed by a V-shaped groove but can also be a recess or groove of square-cornered or circular shape. Also, depressions 12 can act as reservoirs. As described in Zimmerman at the paragraph beginning at line 30 of column 1, the microfluidic structures are formed in the top face of the substrate. As described in the paragraph bridging cols. 1 and 2, where the movement of the substance within the microfluidic structure of channels is gas-driven, it is necessary for the transport channels to be in the form of fully enclosed ducts, such as hollow passages of circular cross-section. In addition, as disclosed in the paragraph beginning at line 35 of col. 5 and Fig. 2, channel 34 is part of a complex passage structure which is sealed off from the outside by a cover plate 36. Neither the figures nor the description of the tip 42 or the tip 57 show or suggest that the tips include a capillary slot formed through a complete thickness of the tip from the first face through the second face as in Applicants' amended independent claim 23. Thus, claim 23 is distinguishable over the Zimmerman patent.

Applicants' independent claim 11 is distinguishable over Zimmermann for reasons similar to those discussed above with respect to independent claim 23.

The Tai and Shultz patents do not overcome the deficiencies of the Zimmermann patent noted above.

The dependent claims are distinguishable over the cited references for at least the reasons discussed above as well as for the individual features they recite.

Prompt and favorable examination on the merits is respectfully requested.

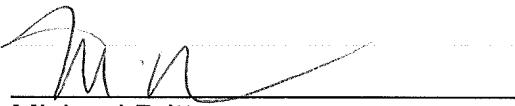
Should the Examiner have any questions regarding this Amendment or the application in general, he is invited to contact the undersigned at the number provided below.

Respectfully submitted,

BUCHANAN INGERSOLL & ROONEY PC

Date: October 14, 2011

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